WHAT IS CLAIMED IS:

1. A solar cell comprising a first electrode layer, a second electrode layer, a p-type semiconductor layer disposed between the first electrode layer and the second electrode layer, and a layer A disposed between the second electrode layer and the p-type semiconductor layer;

wherein the layer A comprises Zn, Mg, O, and at least one element M selected from Ca, Sr, Ba, Al, In, and Ga, and

wherein a photoelectromotive force is generated due to light that is incident from the second electrode layer side.

2. The solar cell according to claim 1,

wherein the element M is at least one element selected from Ca, Sr, and Ba.

3. The solar cell according to claim 1,

wherein a content of the element M in the layer A is not more than 20 atom percent.

4. The solar cell according to claim 3,

wherein a content of at least one element selected from Al, In, and Ga in the layer A is not more than 3 atom percent.

5. The solar cell according to claim 1,

wherein a ratio of atom numbers between Zn, Mg, and O comprised in the layer A is expressed by an expression $Zn:Mg:O = (1-x):x:1$, where x is a numerical value that satisfies an expression $0.05 \leq x \leq 0.35$.

6. The solar cell according to claim 1,

wherein a volume resistivity of the layer A is not more than $1\times10^{12}\Omega\cdot cm$.

7. The solar cell according to claim 1,

wherein the p-type semiconductor layer is a compound semiconductor that comprises at least one element selected from Cu, In, and Ga, and at least one element selected from Se and S.

8. The solar cell according to claim 1, further comprising:

an n-type semiconductor layer disposed between the p-type semiconductor layer and the layer A;

wherein the n-type semiconductor layer is a compound semiconductor that comprises Zn, at least one element selected from Cu, In, and Ga, and at least one element selected from Se and S.

9. The solar cell according to claim 1,

wherein the first electrode layer is made of Mo, and the second electrode layer is a transparent electrode.

10. A method of manufacturing a solar cell that comprises a first electrode layer, a second electrode layer, and a p-type semiconductor layer disposed between the first electrode layer and the second electrode layer, and that generates a photoelectromotive force due to light that is incident from the second electrode layer side, the method comprising:

(i) a step of forming the first electrode layer and the p-type semiconductor layer on a substrate in that order;

(ii) a step of forming a layer A so that the p-type semiconductor layer is sandwiched between the layer A and the first electrode layer; and

(iii) a step of forming the second electrode layer so that the layer A is sandwiched between the first electrode layer and the second electrode layer;

wherein the layer A is a layer that comprises Zn, Mg, O, and at least one element M selected from Ca, Sr, Ba, Al, In, and Ga.

11. The method of manufacturing a solar cell according to claim 10,

wherein the step (ii) is carried out by sputtering.

12. The method of manufacturing a solar cell according to claim 10, further comprising:

after the step (ii), a step of thermally processing the layer A that is formed.

13. The method of manufacturing a solar cell according to claim 12,

wherein a temperature of the thermal processing is in a range of 100°C to 300°C.

14. The method of manufacturing a solar cell according to claim 10, further comprising:

between the step (i) and the step (ii),

(a) a step of forming an n-type semiconductor layer on the p-type semiconductor layer.

15. The method of manufacturing a solar cell according to claim 10,

wherein the p-type semiconductor layer is a compound semiconductor that comprises at least one element selected from Cu, In, and Ga, and at least one element selected from Se and S.